Accelerator Systems Division Highlights Ending March 11, 2005

ASD/JLAB: Cold Linac

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The H-12 cryomodule was shipped to ORNL March 9.

H-2 cryomodule assembly is complete. It will go to ORNL March 16.

SNS CRYOMODULE CONSTRUCTION IS COMPLETE!

ASD/BNL: Ring.

BNL planned shipments within the next two weeks:

- 41CDM30 (1) spare
- 7DS300 (2) Injection Dump Septum (one is spare)
- Stand for Injection Dump Septum
- Measuring coils from P. Wanderer
- Six (6) vac clamps, chain type 250
- Eight flags and G-10 blocks for 30Q magnets
- K1 Extraction Kicker Assembly
- Four boxes containing a Dell Xeon PC, and a Dell Power Edge Server (attn. S. Peng).
- Vacuum hardware for Ring straight sections and spares.
- BIG chamber

Two BNL/SNS technicians were at OR this week to install the feed-through connections and Helico-Flex seals in the end flange of the K2 kicker assembly.

It is our plan to ship the BIG chamber without the strip lines installed (protect the ceramics). We will ship the strip lines detached from the chamber in the same box. BNL techs will assemble the strip lines in the chamber after it arrives at Oak Ridge.

After review by ASD, chamber drawings downstream of QH26 have been signed off and released to the Shops for manufacture.

Measurement of the #2 Injection Dump Septum magnet was completed this week. Techs will install, survey and pin the vacuum chamber before shipment to Oak Ridge.

All the injection dump chambers and stands have been fabricated. Some are waiting to be vacuum fired before shipment to SNS.

The vacuum control test bed is being dismantled and components prepared for shipment to SNS. The PLC chassis and modules for Ring and RTBT are also being packaged for shipment to SNS.

A summary of in-progress SNS work at BNL includes:

- The K1 extraction kicker magnet assembly.
- 17D224 magnet assembly (vacuum chamber).
- 17ELS224 (magnet measurements and vacuum chamber).
- 36Q85 quads – assembly underway in AGS high bay area.
- Movable scraper assembly.
- Injection Dump Septum (spare) (vacuum chamber).
- Diagnostics (BPM, Video Foil Monitor and BIG).
- RTBT Q1/Q2 magnet assembly (mags, stand, vc).

Controls

Several members of the Controls and Application Physics (AP) groups attended an EPICS Relational Database Collaboration Meeting at Argonne National Laboratory this week. This collaboration, initially between SNS and the APS only, attracted interest and participation from BESSY and DESY (Germany), TRIUMF (Canada), SLAC and FNAL with presentations submitted remotely from both SLS (Switzerland) and Diamond (UK). This new product, dubbed "IRMIS:Base," will make available in a relational database all the process variables used by a running EPICS control system – both by EPICS Base and standard EPICS clients. Agreement was reached on a schema, and work was distributed among participants to create "crawlers" to populate this database in a site independent way. The entire project will work within the framework developed by the SNS AP group.

Work continued to try to extract power monitoring data from the Cutler-Hammer system. Some progress was made, but more remains to be done.

Installation

Craft Snapshot 3/8/05

ASD productive craft workers	**71.0**
Foremen (Pd by 15% OH)	6.0
AMSI management (Pd directly)	3.0
TOTAL AMSI WORKERS	79.0
Less WBS 1.9, 1.2 etc	**10.0**
Less absent	**3.0**
TOTAL PD BY ASD/ORNL DB WPs	**58.0**

Accelerator Physics

Operations

Ion Source

Lens 2 has been reassembled after it was found that a loose segment was the root cause of the high voltage discharges experienced earlier in the week. The discharges left tell-tale marks at the exit aperture of our hot spare as shown in the right picture.

Survey and Alignment

In the SCL area, we have laid out all of the bolt holes for the dummy cryo-modules' stands. Seven of the eight dummy pipes have been set in Z. We have aligned cryo-modules HB 08 and HB 09. We have aligned two warm sections. In Magnet Measurement, we have aligned five warm sections with one left to be aligned.

The field work was completed for the Ring control network re-observation campaign. Data checking and adjustment is nearly complete.

Floor profiles were measured at the end of the hot cell, in preparation for the placement of rails.
In the Target area, we have laid down all but two bisectors on the instrument floor. We have aligned the hut and core vessel insert and shutter for beam line number two.

Mechanical

CCL4 RF connections are complete and water system clean-up work is underway.

Vacuum work has been completed on the RFQ and a known leak was fixed.

All vacuum and water systems on the Front End, DTL, and CCL are being checked to allow for the beginning of RF re-conditioning.

Yesterday we placed the last "Dummy" warm section. Another warm section is in the Ring awaiting alignment. This is for slot 18. This leaves five more to go which we are assembling. Also, Steve Heimsoth has been moved to the Vacuum Section.

We have four RTBT 21Q40's mapped.

Ring Systems Installation

- The Ring Extraction straight section Kicker Magnet K2 assy was installed with the assistance of 2 technicians from BNL.
- The Ring Extraction straight section Upstream Doublet support stand was installed.
- The Ring Extraction straight section Downstream Doublet magnet/stand assy was installed.
- One of the SCL Warm Section alignment stands was relocated within the Collimator straight section to allow for positioning of the Collimator Closed Loop Cooling System skid. The second stand will be relocated Monday.
- RTBT Collimator Closed Loop Cooling System skid was placed into position

Water Systems Installation

- Installation of the Linac SCL Cryo Warm Section cooling connections continued.
- Installation of the Linac SCL ME07 HVCM and SCR cooling systems continued.
- Installation of the HEBT Collimator closed loop cooling system was completed.
- Installation of the Ring SB PFN cooling system manifolds continued.
- Installation of the Ring tunnel arc magnet cooling connections continued.
- Installation of the RTBT Service Building PS cooling system continued.

Electrical Group

Linac Tunnel: Completed cable terminations for SCL modules HB-9 and MB-2. Working on cable terminations for SCL modules HB-10, HB-11, and MB-1 and warm section terminations.

Linac Klystron Gallery:
SCL ME-6 area – cable terminations in progress
SCL ME-7 area – cable pulling, ac power installation, cable terminations in progress
SCL ME-8 area – ac power terminations, diagnostics and vacuum terminations in progress

Ring Building: AC power terminations for rf systems, PPS wiring, and rack installation in progress. Installing racks and trays in kicker power supply area. Cable tray installation in PFN building.

RTBT: AC power and cable tray installation ongoing in the RTBT building.

Completed integrated magnet/power supply/controls testing for SCL warm section 26, bringing the completed warm section integrated magnet/power supply/controls tests to 17 of 34. SCL warm section 27 integrated magnet/power supply/controls testing started this week.

Started testing of HEBT quads 12 though 19 (21Q40 magnets in HEBT arc). Tests suspended due to arcing from loose internal magnet bus work on QV15 and QH18 that burned water hoses and a bus work bolt on QV15. Several Klixons were found to be loose as well on these and on other magnets in the arc.

Technician performed some terminations for XFD. Group is also to provide oversight/review of electrical designer in XFD as well as existing engineering effort to estimate and oversee electrical DB work for XFD.

HVCM: We experienced another failure of the DTL-ME2 SCR unit. This subsequently resulted in a fuse rupture outside in the switchgear unit, and the ensuing arc flash damaged the switchgear unit itself. We are working with Cutler Hammer to get the unit repaired, but it will likely be next week. The SCR unit has been repaired, and we are upgrading the snubber assembly to non-inductive resistors (which has resulted in trouble-free operation in the test facility for over 6 months now). We will be upgrading the other units as availability permits.

HVCM: SCL-ME7 installation continues to progress, with work on the IGBT switchplates underway. Also, we received the circuit board design for the dynamic fault detection chassis this week, and will start the PCB design next week. Support is being provided to the RF group for operation of SCL-ME5 as well as operations for NC linac RF operation.

HPRF

Ring RF

- AC Power connection is now about 70 % complete.
- High Voltage amplifier Anode cable and Cavity Dynamic Tuning DC cable is about 30 % complete.

LLRF

Cryo Group

Cryomodule HB12 has been received. HB02 (last of production) will be shipped next week.

Testing of cryomodules resumed last weekend. Preliminary checkouts of all the systems were done on 3/5 and first power tests on cavities HB01d through HB04c occurred on 3/6 and 3/7.

The processing is going slightly slower than for previous systems, but in most cases incident power levels around 100 kW were reached. Testing will continue this weekend.

Beam Diagnostics